Reply to Response to Arguments

Since the Examiner has essentially maintained his positions in the prior rejections and has provided arguments in support of this position, Applicant will address the Examiner's response first.

In the outstanding Office Action the Examiner states that the Lee reference teaches a control scheme that takes the complexity found in the sequence of moving pictures, and adaptively allocates the proper amount of bits for encoding the sequence of moving pictures by changing to the proper quantization step. However, the Examiner has not addressed the deficiencies noted in Lee noted in Applicant's prior response. For example, the Lee process performs a comparison between the coding target frame f_c and the immediate past frame f_{c-1} or between the current frame f_c and the last reference frame f_{ref}. However, the detection of the motion between the frames as a whole is not performed at all, in contrast to the present invention.

The Exmainer relies on Fig. 29 and cols 19-21 to support his position that the Lee reference to teach the detection of the motion between the frames as a whole. However, Lee instead teaches merely to detect a scene change as is known in the art. Particulary, Lee discloses in column 20, lines 54-66 the following (with emphasis added).

> In the curve section 128, TAMI processing for coding frames is shown as a plot of frame distance, that is the global picture movement between frames relative to frame number. The frame distance or movement at which a **Type 0 threshold** is detected is shown by the broken line 130. As shown, each time the frame distance or image movement between frames exceeds the **Type 0 threshold** 130, the immediately previous frame from the occurrence of the Type 0 threshold is designated as a P2 frame. As

previously explained, in this example, a GOP consists of 15 frames, designated by frame numbers "0" through "14", with the "15th" designated frame actually being the first frame of the next GOP.

The Type 0 threshold is a scene change threshold. This is clearly shown in Fig. 4 and described, for example, in column 10 lines 53 to column 11, line 11, which discloses the following (with emphasis added).

> Two types of **scene detectors 12 and 14** are required for processing the algorithm, as shown. In FIG. 4, the first detector 12 declares a scene change of Type 1 for the current frame when the distance or relative movement measure between the current frame f_c and the immediate past frame f_{c-1} is above a threshold T_1 (step 103). This type of scene change corresponds to an actual scene content change; it is coded as an I2 frame (very coarsely quantized intra frame), and the immediate past frame f_{c-1} is coded in step 106 as a P2 frame (very coarsely quantized predicted frame). The I2 frame coding exploits the forward temporal masking effect, and the P2 frame coding takes advantage of the backward temporal masking effect.

> The second detector 14 detects **scene changes of Type 0.** This implements a temporal segmentation algorithm for processing. This algorithm, as shown in FIG. 4, declares the current frame f_c **as a scene change of Type 0**, when the distance or relative movement measured between the current frame f_c and the last reference frame f_{ref} is above a threshold T_0 (see step 104). This time the immediate past frame f_{c-1} becomes a P1 frame which is a regular predicted frame. The bit allocation strategy for the temporal segmentation is that every end frame of temporal segments should become a P1 frame, and that the frames in between should be B1 or B2 frames depending on whether the extra P1 frame is being used or not.

As previously noted, the Lee process as described above, performs a comparison between the coding target frame f_c and the immediate past frame f_{c-1} or between the current frame f_c and the last reference frame f_{ref}. The Type 0 threshold used in Fig. 29 is clearly just a scene change threshold that is calculates as previously described and does not detect the motion between the frames as a whole.

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Further, the Examiner argues that Lee and Odaka are analogous to one another and that they are "used in the same MPEG video encoding environment." Applicant respectfully submits that the Examiner has misunderstood and mischaracterized Applicant's prior arguments.

Applicant did not allege that the Odaka and Lee references are drawn to non-analogous art. Instead Applicant clearly stated that the Examiner's proposed comnbination changes the principle of operation of the Odaka patent and completely modifies the operation of the "TAMI" algorithm of the Lee reference without showing any motivation to make these modifications. As stated in MPEP § 2143.01, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). The Examiner has failed to address the merits of this requirement and instead has merely relied on a conclusory statement that the references can be combined because they relate to an MPEG video encoding environment. Stated more simply the Examiner has failed to address why one of ordinary skill in the art would partially replace the algorithm taught in Odaka with the algorithm taught by Lee and make modifications to Lee such as eliminating the I1, I2, P1, P2, B1, and B2 frames. Further, it is unclear how the Lee algorithm would operate without these specialized frame types.

As previously noted, the Odaka patent achieves this by updating the allocation rate of the amount of codes in such a manner so as to set the

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relationship among the I, P and B pictures to a predetermined constant relationship. The primary function of the encoding control processes of the Odaka system is to allocate the target amount of codes to each of the three picture types based on the global complexity measure that is a product of the number of generated bits and the respective quantizer step size.

In contrast to this "principle of operation" of the Odaka patent, the Lee reference relies on a custom set of frame definitions (i.e., six different frame Types, I1, I2, P1, P2, B1, and B2 are used). This in and of itself destroys the combinability of Odaka and Lee as alleged by the Examiner, because it would require that Odaka adopt the unconventional bit allocations of the additional frames which would destroy the predetermined constant relationship between the conventional I, P and B frames.

Still further, in direct opposition to the predetermined constant relationship taught by Odaka, Lee explicitly teaches to vary the bit relationships and even control the bit rate by controlling the type of frames used, such as describe in column 3 lines 1-13, Clearly, this type of operation of Lee is in direct opposition to the principles of the Odaka patent.

Therefore, even taken as a "whole" the teachings of these references are not sufficient to render the claims prima facie obvious, even if the alleged combination did yield Applicant's claimed combinations, which it does not. Accordingly, Applicant respectfully requests the Examiner to reconsider and withdraw these rejections

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Rejections under 35 U.S.C. § 103

Since the Examiner has essentially maintained his rejection of claims 1-14 under 35 U.S.C. § 103 as noted above, Applicant once again traverses these rejections. Applicant expressly maintains the reasons from the prior responses to clearly indicate on the record that Applicant has not conceded any of the previous positions relative the maintained rejections. For brevity, Applicant expressly incorporates the prior arguments presented in the prior responses without a literal rendition of those arguments in this response.

SUMMARY

For at least the foregoing reasons and the reasons set forth in Applicant's responses of April 15, 2002 and May 15, 2002, it is respectfully submitted that claims 1-14 are distinguishable over the applied art.

CONCLUSION

All objections and rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance and such allowance is respectfully solicited. Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Mark E. Olds, Reg. No. 46,570, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.
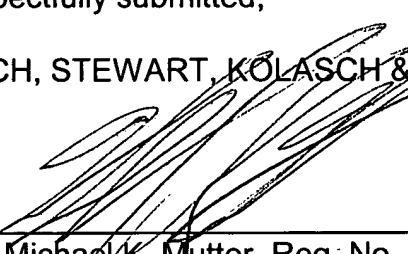
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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1. 17; particularly, extension of time fees.

Respectfully submitted,
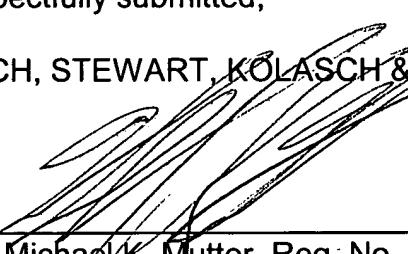
BIRCH, STEWART, KOLASCH & BIRCH, LLP

By:_____
Michael K. Mutter, Reg. No. 29,680
P.O. Box 747
(703) 205-8000
Falls Church, VA 22040-0747

MKM/MEO/kmr/lab